

Amendment Dated 05/22/06
Response to Office Action Dated 12/21/05

Application No. 10/085,172

REMARKS

Claims 1-5, 7-18, 20-28, 30-41, 53, and 54 are pending with this paper. Claims 1-5, 7-18, and 20-41 are rejected. Claims 42-52 are withdrawn from consideration. Applicant is canceling claim 29 in this paper. Applicant is amending claims 1, 14, 25, 30, 34, and 38. Applicant is adding claim 54 in this paper.

Applicant added claim 53 in the paper filed on August 8, 2005; however, the Office Action does not provide any rejection of the claim.

Claim Rejections – 35 U.S.C. § 102

Claims 1, 3, 4, and 5 are rejected by the Office Action under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,766,029 (Maisano).

Applicant is amending claim 1 to include the feature of “an algorithmic block producing a desired resulting output beam having a narrowed on-axis beamwidth, wherein the narrowed on-axis beamwidth of the desired resulting output beam is produced by superpositioning a desired main beam with a steerable beam steered at an angle from the axis of the desired main beam and having a determined beamwidth.” (Emphasis added.) The amendment is supported by the specification as originally filed. For example, the specification discloses (Page 13, lines 7-12):

The main beam M initially has a beamwidth β on a polar representation. The beamwidth β may or may not be known. The width of the main beam may be determined by simulation or measurement. The widths of the cancellation beams may be determined by simulation or experiment. The resulting beamwidth is a function of the angle and amplitude coefficient of the cancellation beams – and therefore the amount of overlap.

The Office Action alleges that (Page 2, Response to Arguments):

Applicant alleges that Maisano does not disclose superimposing a desired main beam with a steerable beam. However, it is clear from the reference that a second order cardioid is produced by the apparatus of figure 8. The signal formed by beamformer 32 is a first order cardioid. Thus, the signal output from unit 28 is a steerable first order beam itself, the beam being steerable by unit 30.

However, Maisano merely discloses a first order cardioid that has a fixed shape (as shown in fig.

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3 of Maisano) and does not even suggest a "steerable beam steered at an angle from the axis of the desired main beam and having a determined beamwidth."

Moreover, because claims 3, 4, and 5 ultimately depend from claim 1, claims 3, 4, and 5 are not anticipated for at least the above reasons. Applicant requests reconsideration of claims 1, 3, 4, and 5.

Claims 1, 3-5, 8, 9, 14-16, 18, 20, 23-27, 29, 30, 34, 36-39, and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,449,586 (Hoshuyama).

As previously discussed, Applicant is amending claim 1 to include the feature of "an algorithmic block producing a desired resulting output beam having a narrowed on-axis beamwidth, wherein the narrowed on-axis beamwidth of the desired resulting output beam is produced by superpositioning a desired main beam with a steerable beam steered at an angle from the axis of the desired main beam and having a determined beamwidth." (Emphasis added.) The Office Action alleges that (Page 2- 3.):

Hoshuyama discloses a microphone array system used to follow the movement of an interference signal and canceling said signal from a target signal comprising transducers I_0 - I_{m-1} beamformer 2, blocking matrix 20 and multi-input canceller 31 as an algorithmic block for narrowing the on-axis bandwidth. An output signal is generated by adder 9.

As disclosed by fig. 1, Hoshuyama merely discloses an adder 9 that subtracts a signal derived from fixed beam former 3 from a signal derived from fixed beam former 2. Hoshuyama merely discloses an adaptive array that can follow a moving interference signal source. As shown in fig. 4, Hoshuyama discloses the directivity of the fixed beam (corresponding to fixed beam former 3 as shown in fig. 1) having the same characteristics (shifted with respect to the signal arriving direction) of blocking matrix 20 (as shown in fig. 1). However, Hoshuyama does not even suggest a "steerable beam steered at an angle from the axis of the desired main beam and having a determined beamwidth."

Applicant is amending independent claim 14 to include a similar feature of "determining a beamwidth of the cancellation beam with an overlap with the desired main beam." Applicant is also amending independent claim 25 to include the features of "producing a cancellation beam," "steering the central axis of the cancellation beam a phase specified by the pre-determined

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desired resulting beamwidth of the desired resulting output beam,” “determining a beamwidth of the cancellation beam,” and “subtracting the cancellation beam from the desired main beam via superpositioning.” Claim 25, as amended, incorporates features from claim 29 and the feature of “determining a beamwidth of the cancellation beam.” Also, independent claim 38 is amended to include the feature of “determining a bandwidth of the cancellation beam.” Claims 3-5, 8, and 9 ultimately depend from claim 1. Claims 15-16, 18, 20, and 23-24 ultimately depend from claim 14. Claims 26-27, 30, 34, and 36-37 ultimately depend from claim 25. Claims 39 and 41 ultimately depend from claim 38. Thus, Applicant requests reconsideration of claims 1, 3-5, 8, 9, 14-16, 18, 20, 23-27, 29, 30, 34, 36-39, and 41.

Claim Rejections – 35 U.S.C. § 103

Claims 2, 7, 21, 22, 31-33, 35, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshuyama.

The Office Action alleges that no patentable weight is assigned to a duplication of parts and that the Examiner takes Official Notice that it is well known to accomplish signal processing in the analog or digital domain. Because claims 2, 7, 21, 22, 31-33, 35, and 40 ultimately depend from independent claims 1, 14, 25, and 38, claims 2, 7, 21, 22, 31-33, 35, and 40 are patentable for at least the above reasons. Applicant requests reconsideration of claims 2, 7, 21, 22, 31-33, 35, and 40.

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshuyama in view of US 5,862,240 (Ohkubo).

Claims 10-13 depend from claim 1. Moreover Ohkubo does not make up for deficiencies of Hoshuyama. Thus, claims 10-13 are patentable over Hoshuyama in view of Ohkubo. The Applicant requests reconsideration of claims 10-13.

Claims 17 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshuyama in view of Marash.

Claims 17 and 28 ultimately depend from claims 14 and 25 and are thus patentable for the above reasons. Applicant requests reconsideration of claims 17 and 28.

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Applicant is adding independent claim 54, which is supported by the specification as originally filed, e.g., Figure 2 and the associated material in the detailed description.

All objections and rejections have been addressed. Hence, it is respectfully submitted that the present application is in condition for allowance, and a notice to that effect is earnestly solicited.

Respectfully submitted,

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